



This was the birthplace in 1904 of electric service in Portage. Owned by the York Brothers, the feed mill was well known for its York's Best flour, which later became the

King Midas brand. The buildings at the right housed the generating equipment and the combined utility and feed mill offices.

Lines in the Sky - VI

Portage District

Importance of the geographical location of the City of Portage, and the solid foundations on which its first ventures in utility service were built, seem to have marked this area as a logical training ground for management and for experiment in utility operation in the early days of our company. The spotlight of central operation was removed from the city in 1919 with establishment of general offices in Madison. However, the solid progress of efficient operation has been carried on as the numerous localities of the district's area have been knitted together into an efficient operating district.

Records concerning the beginning of gas service in Portage are scanty. Memories of living persons associated with gas operation do not span the years back to 1886. In that year, two local men, M. T. Alverson and James B. Taylor, together with Carroll E. Gray, Beloit, filed incorporation papers for the Portage American Gas Company. Alverson was the first president. The company's capital stock consisted of 400 shares at \$100 each, for a total capitalization of \$40,000. Incidentally, that amount of capitalization was carried on the books until the company ceased to exist in 1925 with acquisition by Wisconsin Power and Light Company.

It is quite certain that expansion during the 39 years of the

Portage American Gas Company was financed by profits or by direct investment of funds by some parent company. By 1909, names of Philadelphia people began to appear in the Board of Director's list, and we must assume that the Portage company was part of a larger gas operating concern.

Early Growth

Chester Sroka (deceased), who entered the gas business in 1906, has left us a paper in which he records that the greatest period of expansion of gas service came about 1906 and 1907. He was hired as a youth to read meters and to learn the gas fitters' trade.

In 1906, the company had 400 customers and a 25,000-foot holder, and laid many miles of mains. Hooking up customers was a big job, and as many as six gas ranges were connected by a serviceman in one day. In 1909, Charles Vesely joined the gas crew, and remained to work until retirement in 1954.

Lighting the gas lights was a regular and a tedious job, and standing on a ladder for a half hour in 20-degrees-below-zero weather trying to get a stubborn light to burn was no one's idea of fun. Even worse was a walk of a mile or two on a cold winter's night to thaw out a gas pipe. The charge for this service call was 10c.

On January 15, 1947, a conversion crew of the Midwest Conversion Company, moved into Portage, and within a few days had the entire city system equipped for use of liquid petroleum gas. As the order came to shut down the coal gas plant, one of the stokers tossed his shovel into the furnace part of the retort remarking: "Well, I won't need that any more."

First Electric Service

Electric service came to Portage in 1904. Irvin and Eugene York, owners of a large flour and feed mill were the promoters. Their mill was well known for its York's Best flour, which in later years became the King Midas flour, a trade name still known to homemakers. The Yorks built an addition to their mill to house the generating equipment which consisted of a 200-kilwatt AC generator driven by the steam engine of the mill.

The Yorks were stern taskmasters, as A. D. Johnson, retired, now recalls. Regular working hours were 7 a. m. to 6 p. m. After an hour off for supper, employees were to report back at 7 p. m. and remain until 9:30 or 10:00 p. m. If there was electric troubles, the men took care of them. If there was no electric work, they were expected to help farmers load their wagons with feed.

In one priceless reminiscence, Johnson recalls an evening telephone call taken by Irvin York. The connection was good, and the caller's voice boomed across the small office. He asked for the delivery price on a quantity of oats. York figured the cost, and then pleasantly inquired: "And who is this for?" "For my horse, you D..... fool," was the reply. where upon York let out a frustrated blast and tore the telephone from the wall.

Utility Manpower

Other members of the crew who worked with Johnson in this period were Fred Forbes, foreman, and Albert Sherman. Ray Wiedenhaupt, salesman, joined the crew in 1912 as did Otto Kranzush, deceased. When there was enough line work to warrant it, a team and wagon was hired to haul poles, cross arms and other materials. Otherwise, if a single pole was to be set, it was balanced on a two-wheel cart and the entire crew tugged and strained to take it where it was wanted.

By 1909, power from Kilbourn plant was flowing into Portage on its way to Watertown, and York's electric business had outgrown the capacity of his small mill plant. He signed a contract with Southern Wisconsin Power Company to take power from the high line, and offered to install the frequency changing equipment providing the company built the substation and house for the equipment.

Grover C. Neff, then doing general engineering work for the company, was asked to design the substation and building and to estimate the cost of construction. He estimated the cost of the building at \$11,500, but when bids on the job were received, the lowest bid was around \$18,000.

Chided for "missing the mark" by such a wide margin, Neff re-checked his figures and rashly declared that he could build the house for his original figure. Told that "the job is yours" he collected a construction crew and set about the work. He soon realized that the work could well continue on into winter weather when costs were apt to soar high. Beginner's luck was with him, however, for there was a late fall and a mild winter. The substation building was completed at a final cost of \$11,000.

M. O. Election

By about 1913, there was trouble brewing in Portage. The Yorks has apparently enjoyed some degree of prosperity for



The original substation at Portage, which was designed and built by G. C. Neff, looked like this shortly after it was completed.

a move to have the City of Portage acquire the property was started. Faced with this problem, management of the plant was put in the hands of Woodmansee and Davidson Company, Milwaukee, an engineering firm that had done consid-

Continued



Beginning of the modern age is indicated by this 1913 photo. The truck is a one-cylinder Brush. Pictured, left to right, are A. D. Johnson, Otto Kranzush and Ray Weidenhaupt.



Oscar Melter (deceased), stoker in the Portage gas plant, paused in his work to have this picture taken in the 1920's.

erable work for John I. Beggs. Then deeply involved in utility operation in the Milwaukee area, Beggs had acquired the stock of Southern Wisconsin Power Company (Kilbourn plant) and Wisconsin River Power Company (Prairie du Sac plant) from their creator Magnus Swenson. It is believed that Woodmansee and Davidson acted as intermediary for Beggs during the municipal election.

Opinions pro and con on acquisition ran high, and as an intended clinching argument, Woodmansee and Davidson promised to build a major power plant and actually purchased 200 acres of land along Highway 51 south of the city. (This land is still owned by WP&L.) Test holes were drilled and plans seemed to be advancing toward building the plant when the election occurred. The municipal fraction won the election. However, the City of Portage was engaged in paving its streets at the time, and enthusiastic municipal acquisition advocates had induced a number of itinerant street workers to vote. The election was challenged and declared to be illegal, thus ending the threat to private ownership.

Shortly after this, John I. Beggs became the known owner of the Portage electric utility, and in 1917 the property was purchased by Insull interests in a deal which included Kilbourn and Prairie plants as well as the Wisconsin Power, Light and Heat Company, which Beggs had formed for the purpose of acquiring operating property.

First General Office

With purchase by Insull, the nucleus of a general office of Wisconsin Power, Light and Heat Company was established at Portage. General direction of company affairs stemmed from Chicago, but application of these directions concerning operation and engineering was in the capable hands of Neff, E. J. Kallevang, chief engineer, Joe Verheyden (deceased), and others. Some of the "others" were Ralph Farrington, surveyor; A. I. Allegar, draftsman; Floyd Chambers (deceased); and L. E. Hayes, present district manager at Janesville.

District Managers

The executive force of this general office was moved to the Gay Building, Madison, in May 1919, and the engineering and construction work continued at Portage until March, 1922, when it was moved to Madison.

Management of Portage utility work fell into the hands of Fred Nourse in 1914, and he was succeeded by A. D. Johnson (retired) in November, 1917. Johnson served as district manager until September, 1919, when he went to Beaver Dam. Dana Billings, who came to Portage in 1915 as an engineer, and brought there by N. A. Landt, chief operator, was made district manager in 1919, and served until transferred to Ripon as district manager in 1934.

Street Railway Service

It was in 1918 that street railway service came to an end in Portage. The railway company had gotten off to a good start, and under leadership of J. E. Jones, editor of the Portage Democrat, had prepared elaborate plans for an inter-urban system to connect Portage with Madison. Some right-of-way had been bought, and rails actually had been laid at the Madison end. There was not enough backing to insure construction of the line and the plan failed.

So, too, did the Portage street railway company. As passenger volume decreased, the size of its delinquent bill increased. Finally, the company was notified by Wisconsin Power, Light and Heat Company that the power was to be shut off. Dana Billing was told the day and hour on which to pull the switch. Promptly at 10 o'clock in the morning the power was turned off. Within a few minutes, Billings received a telephone call. It was a motorman who pleaded for the power to be restored for "just a few minutes until I can get my car back to the barn." Billings complied.

R. C. Underkofler, present district manager, succeeded Billings in 1934, and under his tenure the service load has continued to grow. Portage District has been welded into a solid and prosperous operating unit.



Utility service in Portage wasn't very old when this picture was taken. On the pole, left to right, are Ray Weidenhaupt and Elmer LaShure. Seated in the wagon are Otto Kranzush and "Skinny" Mahan.

Building A District

Acquisition of small utilities which became part of Portage District began about 1924. At Wyocena, B. C. Keeley installed equipment in his feed mill in 1904 which consisted of a 230-volt DC generator. By 1908, the plant was owned by Arved Forkell, who extended lines to Rio and Pardeeville, but the distances were too great for the power available and service was not satisfactory. James Moore, and his son Earl, bought the utility in 1918 and ran it until 1926 when it was sold to Wisconsin Power and Light Company. James Moore was a parttime employe until 1948 and Earl continued to operate the plant for the company and serve as local representative until retirement in 1949.

At Rio a steam plant was built in 1900 by a man named Van Ernum. Known as the Rio Electric Light Company, the plant operated at 133 cycles. Bert A. Shew and his son, Gilbert, bought the plant in 1920, and a line was built to Columbus to bring power into Rio. This plant was sold to WP&L in 1925, and Gilbert has continued to serve the company at Rio as local representative.

A considerable amount of operating property came under company management with purchase on June 5, 1924, of the Badger Electric Service Co., a stock organization. Among the five incorporators was B. E. Miller, later secretary of our company and since retirement in November, 1947, administrator of Methodist Hospital, Madison.

Badger Electric was primarily a transmission company to start with, but gradually equired retail systems. It first built a 13,000-volt line from Dane to Norway Grove and Deforest, and distribution systems were built in these communities. Next, the 13,000-volt line was run to Sun Prairie where power was sold at wholesale. Next, a line was built from Deforest to Windsor, Arlington, Morrisonville and connecting with the Poynette Electric Company, which Badger Electric purchased in 1918.

Generating equipment at Poynette consisted of a small hydro plant and a kerosene engine. It was a popular joke that the only way the company could get enough water to operate the hydro plant was to go upstream and beat the frogs on the back.

Badger Electric also had extended service to Windsor, and had built a considerable rural farm load before the company was sold to Wisconsin Power and Light Company.

April 15, 1950, was a gloomy day in Portage. The entire office crew was without a home. A fire of unknown origin, which started in an adjacent building, swept into the company office and entirely destroyed it. Great as was the loss of office equipment, tension eased when the safe had cooled and could be opened. All of the vital records, including cash, accounts receivable, meter books and other records were found intact.

Temporary offices were set up in a downtown building, and work of the district continued without great interruption. Shortly after, a large old home was purchased. There, reflected in the built-in buffet mirrors, was set up a cashier's office and a floor display of merchandise. The kitchen became the sales department office, and Undergofler directed district affairs from a lovely old sitting room. Upstairs the accounting department converted the numerous bedrooms into offices. Office girls made an impressive sight as they descended the grand staircase of the home as they left after the day's work. A new and modern office building, built in 1953, settled this district problem.

History frequently overlooks and too often forgets some who should be remembered. Many an employe has acquired



This was the cashier's "cage" at the temporary headquarters set up in one of the fine old Portage homes after the former office building burned on April 15, 1950.

his lore in electric operation from Charles Ashley, genial electrician and substation employe. Another is Charles Carney, retired, who saw the gas operations through some trying periods.

Also remembered are Walter Chappell, Justus Johnson, Deforest; John Lockwood, and many others. It is because of these dependable employes that it was possible for Portage District and our company to continue to provide dependable service to its many customers.



Portage office girls of the 1920's era dressed in these Gay Nineties costumes for this picture. Left to right, they are Leone Berger, June Romson, Lulu Fuller, Olive Niemeyer and Margaretta Merrell.



THIS ELABORATE display at Fond du Lac in 1926 shows the degree of emphasis put on rural electrification by our Company at this early stage.

Lines in the Sky - XX

Rural Electrification

RURAL ELECTRIFICATION has always been of prime importance to our Company and to the entire electric industry. Rural areas, however, were not the first to receive the benefits of electricity in the days when the new industry was struggling for a foothold in the economic life of our nation.

The field for electricity was limited at first. Viewed with suspicion; feared and thwarted by other interests to whom electricity was a vigorous competitor, the electric industry at first served only luxury patronage. Then those who believed in the future of electric power began to adapt electricity to the commonplace equipment of homes and business and acceptance began to grow. With growth in use of electricity there also came improved means of generation and transmission of electric power.

At the turn of the century electric power was in wide use throughout the nation from a geographic standpoint, but local use in each community was limited. Farmers, for the most part, generally ignored the "new fangled" power, or showed only cursory interest, for electric service was designed almost entirely for urban centers.

Seek 24 Hour Service

During the formative days of Wisconsin Power and Light Company there was begun a systematic expansion of electric lines to link together the many operating communities being acquired as a means of molding them into a large operating company. Institution of 24-hour service was one of the goals. To accomplish this, the Company built a network of transmission lines all over the area.

These transmission lines not only brought around-the-clock service to communities already enjoying electricity, but they provided service for many communities which had no service before. They also tied together the generating plants of the utility systems which our Company had acquired. This early construction work linked together numerous communities into an integral network for better service and mutual benefits. Then, and only then, was it feasible to approach the rural electrification problem with authority.

However, it was not until 1926 that extension of rural service by our Company was begun on a large scale. Prior to that year a number of short rural lines were built out from towns and cities by local electric companies which eventually were to become a part of Wisconsin Power and Light Company.

The Equitable Electric Light Company, of Lake Geneva, then under management of James "Jim" Allen and his brother, John, built its first farm line from Lake Geneva to Genoa City in 1910 and served the farms along the right-of-way. Four years later this company built another rural extension, running south of Lake Geneva along what is now Highway 120.

In 1920, a group of farmers living near Prairie du Sac approached the Southern Wisconsin Power Company (Prairie du Sac hydro plant) and requested electric service for their farms. A year later a distribution line was built into this rural area.

First Study Problems

Anxious to develop the rural load as rapidly as

possible, our Company, together with other electric companies, reasoned that a thorough knowledge of the needs of farmers should be known before intelligent application of electric power to their needs could be made.

In 1921, the Rural Lines Committee, of the National Electric Light Association, was organized, and Grover C. Neff, of our Company, was made chairman of the group, a position he held until 1927. This committee studied the rural problems from many angles — rural line construction standards, maintenance and operation of rural lines, rural rates, methods of financing, utilization of electric service on the farm and its value to the farmer, and development of farm equipment suitable for electric drive.

Accurate information on these subjects was very meager. It was a period of costly experiment, and investors in electric utilities were wary about backing a rural electrification program with their savings.

Membership of the committee included 31 persons representing operating companies from all sections of the United States. Reports of their findings and experiences were blended together to form comprehensive conclusions which were of mutual benefit to all members in their rural electrification work.

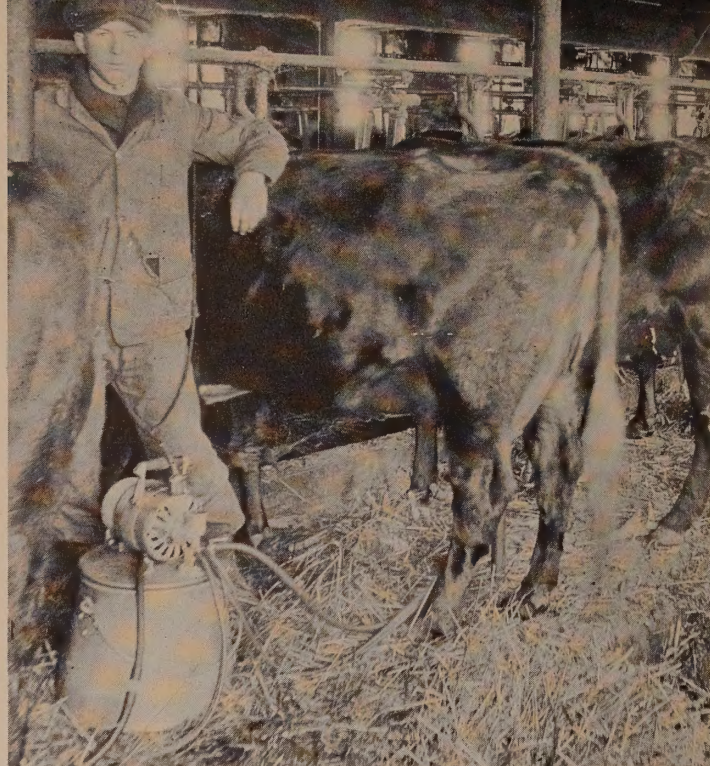
At the start of rural service expansion, construction investment in rural distribution systems was approximately six and one-half times higher than was required to supply an urban customer with the same amount of service. Distribution electric losses ran higher on rural lines than on urban lines, and depreciation of rural lines was several times higher.

In the 1923 annual report of the Rural Lines Committee there appeared this statement:

"The Rural Lines Committee believes that the farm power situation is about ready to make radical changes comparable with those made in the industrial situation during the last 20 years.

The rapidity of such change depends very large-

OUR COMPANY'S FARM service promotion department used this Model-T Ford truck to cover the rural territory in 1928. Members of the crew, left to right, are Ralph Walter, Harry Gilbert, and Elmer R. Meacham.



ONE OF THE EARLY electric milking machines was this two-cow unit with motor-driven vacuum pump mounted on the head of the unit.

ly upon the amount of intelligent study put upon the farm power problem."

The 1923 report showed that about 7% of the 190,000 Wisconsin farms had electric service, with 3.7% receiving central station service and 3.3% having individual farm electric plants. For the nation, only 348,000 of its nearly six and one-half million farms had any form of electric service. Central stations of electric service companies were serving 165,000 farms in that year.

Conduct Varied Experiments

While these early studies of farm electrification problems were underway, it was soon realized that the whole job could not be done by the electric industry alone. Consequently, support of agricultural schools, state agricultural departments, and prominent farm organizations was enlisted. They were welded into a group known as the Committee on the Relation of Electricity to Agriculture.

The interests of this group centered on experimental work under actual farming conditions. In Wisconsin, membership consisted of representatives from the Wisconsin Utilities Association, College of Agriculture, University of Wisconsin; the Grange, Farm Bureau Federation, the state department of agriculture, and manufacturers of electric plants.

With the farmers and Wisconsin Power and Light Company cooperating, an experimental line to serve six farms was built out of Ripon. On these six farms, experiments were conducted with improvised water heaters, brooders, forage drying, milking machines, feed grinders, multi-purpose motors, ensilage cutting, water pumping, and electric incubation. For the housewives there were electric cooking, electric irons, dish washers and other appliances.

This was typical of experimentation in progress in 27 states. Original ideas for farm electric equipment were refined and improved. The reactions and in-

terest of farmers themselves was an important and encouraging phase of the work. Manufacturers of equipment began to see the possibilities of the farm market from the electric power angle and their experimental departments turned their work toward utilization of electricity.

Development of the electric market and adapting electric power to farmers' needs was not the whole story. In order to make extensive use of electric power, farmers had to realize economic benefits as well.

In acquiring electric properties, Wisconsin Power and Light Company had inherited the various rate schedules of these companies. As consequence, among the slightly more than 1,000 rural customers which the Company served in 1925 there were 69 different rural rates in effect. From the Company's standpoint, this conglomeration of rates resulted in a complex and confusing system of accounting. From the farmers' standpoint there were inequities in the charges for electric service that caused misunderstandings and discontent.

Uniform Rural Rate Set

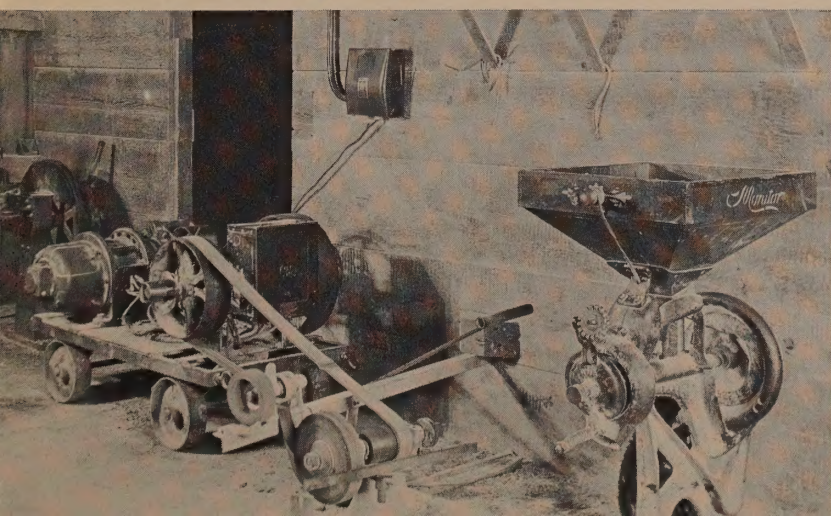
Fully aware of the rate situation, Mr. Neff recommended that a uniform rural rate be applied to all rural customers of the Company. He set in motion an extensive study which finally crystalized into a petition to the Railroad Commission of Wisconsin for a uniform rural rate.

Rural customers immediately went on the defensive and organized a Committee of Electricity to represent their interests. The battle on rural rates lasted for several months while the farmers' committee studied the rates in effect in every state where rural service was supplied. It also made an extensive study of rural rates in effect in Canada. One by one the misunderstandings and doubts were cleared up.

The proposed uniform rate was approved by the Railroad Commission on June 21, 1926. Under date of Sept. 20, 1926, the farmers' Committee on Electricity circulated a letter to every customer of Wisconsin Power and Light Company, and to many other interested persons, which included the following significant paragraph:

"After many meetings, covering a period of a number of months, in which your Committee

"POWER ANYWHERE you need it" was the idea behind this portable electric motor shown driving a feed grinder. Later development provided each piece of equipment with its own built-in motor especially adapted to the work to be done.



THE MONITOR-TOP General Electric refrigerator came on the market in the late 1920's and was a study and useful appliance. A few of this model still are found in daily use.

gathered data from Canada and every state in the union that has rural users of electricity, we consider that we now have the best farmers' rate, taking into consideration the territory it covers, that is in existence today."

This equitable uniform rate for farmers was the first such uniform electric rural rate to be adopted anywhere in the United States. It established a pattern on which other electric companies could model uniform rates of their own.

Results! There were plenty of them. From an average of 836 rural customers served by Wisconsin Power and Light Company in 1924, the number increased rapidly. The following tabulation shows the growth of rural electric service in the Company's system:

Year	Average No. Rural Customers
1924	836
1925	1,063
1926	1,462
1927	1,871
1928	3,802
1929	6,248
1930	7,721
1931	8,734
1932	9,013
1933	8,847*
1934	8,993*
1935	9,228
1940	17,176
1945	24,236
1950	34,499
1960	39,597
1962	40,664

*Shows effect of depression years.

Back in 1924, the average rural usage was 825 kilowatt hours per customer. This usage fluctuated during the depression years, and didn't pass the 1924 mark until 1937, when the average usage reached 890 KWH. The year 1938 saw the start of an appreciable and continuous rise in average usage

with the figure for that year reaching 1,015 KWH. By 1945, this average had climbed to 1,785 KWH, and in 1950 the figure was 3,461 KWH.

From that year on, figures for rural electrification take on a somewhat different meaning. In subsequent years the rural customer picture had included an increasing number of small commercial and strictly residential services while the number of bonified farms has actually decreased. The term "rural electrification" now cannot be accepted as pertaining solely to farms.

Usage Increases; Cost Drops

However, at the close of 1962, Wisconsin Power and Light Company was serving 29,445 farms, and the average annual usage for these farms was 8,707 KWH. The tremendous increase from 825 KWH used in 1924 to the 8,707 KWH average 39 years later reflects the importance of electric service where mechanization has replaced muscle power in production of agricultural products.

Cost of electric service to rural customers has spiraled downward over these same 39 years. The average revenue per kilowatt hour from the rural service load in 1924 was 11.095¢. In 1940, the average revenue was 5.744¢ per KWH, by 1945 it had dropped to an average of 4.685¢, and by 1962 it was 2.830¢ per KWH on the average, for a total reduction over the years of 74 per cent.

In 1924, rural customers represented only 2 per cent of the total retail customers of the company, and they supplied only 3.3 per cent of the retail electric revenue. By 1940, rural customers represented 15.3 per cent of the company's retail customers and were supplying 14.6 per cent of its retail electric revenues. In 1962, rural customers represented about 19.9 per cent of the customers and were returning 21.8 per cent of the total retail electric revenues.

In 1929, Wisconsin Power and Light Company instituted the first "saturation" of a rural area. In that year the entire rural electric service area of Sheboygan District was supplied with rural distribution lines. Farmers of the area responded enthusiastically with their patronage. Regular orderly expansion of rural lines was underway in other sections of the Company's operating property.

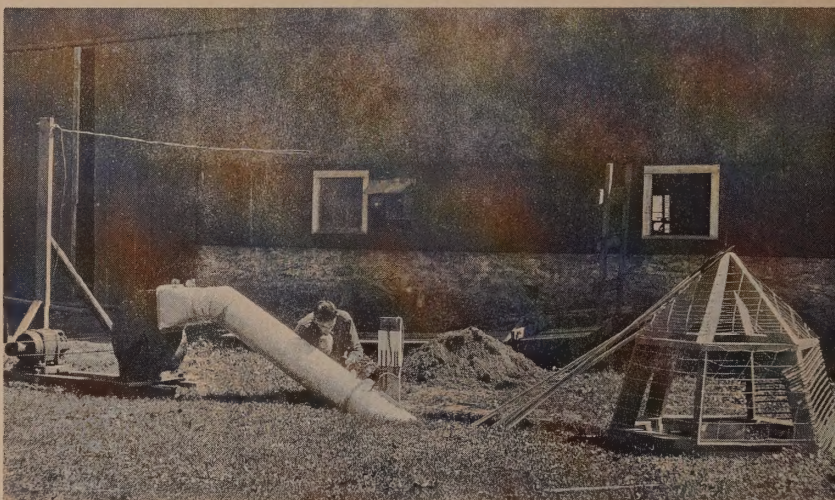
The full weight of the depression, which hit the electric utility industry in the early 1930's, slowed rural electrification by business-managed companies. Private capital was not available for continuation of an extensive rural lines program, and the economic situation caused a reduction in usage of electricity with some farms actually discontinuing service for a number of months.

In 1935, our national congress created the Rural Electrification Administration and made federal funds (tax money) available to organized farmer groups at low interest cost so that they might build and operate their own electric distribution facilities. Wisconsin Power and Light Company has sold electric power at wholesale to a number of these farm electric co-operative groups for many years. The wholesale rate for REA-financed co-operatives was

established at the beginning after extensive discussion of the matter with REA officials, Company representatives, and representatives of the Public Service Commission of Wisconsin.

Growth of REA

The electric co-operatives made rapid strides from their inception principally because of unlimited financial backing and tax subsidies provided by the Congress and also because of the pioneering work done in rural electrification by Wisconsin Power and Light Company and its contemporaries. Electricity at work has no political identification. The pioneers of the business-managed electric industry had met and solved many of the distribution and service problems long before REA was conceived or created.



EARLY EXPERIMENTS in hay drying were conducted with this motor driven blower and stack ventilating cone. Today, a similar principle effectively dries hay in the mow.

Throughout the years our Company has continued its emphasis on rural electrification, first through expansion and then through strengthening and improving its sources of supply and its distribution facilities to meet the rapid growth in usage. In field service work, Company representatives have worked closely with county agents, farm organizations and through dealers in farm equipment to tell the story of application of electric power on the farm. The annual Farm Materials Handling Field Days, which the Company co-sponsors, has helped emphasize the benefits of powered mechanical aids to farming. Wisconsin is a leader in farm mechanization.

Since 1945, the Company has actively promoted the Electric Research Farm, near Madison, as a member of the Wisconsin Utilities Association. Here experimental work has been devoted to research in reducing the labor factor in farming and the general improvement of rural life through economic use of electric light, heat and power. Out of the Electric Research Farm studies has come much information and many hours of labor have been eliminated. Mechanization of the farm now applies in most of the operations in and out of the barn where modern methods are employed, thanks to the continued pioneering work started back when rural electrification was a big problem to be solved and carried on through succeeding years into the present.